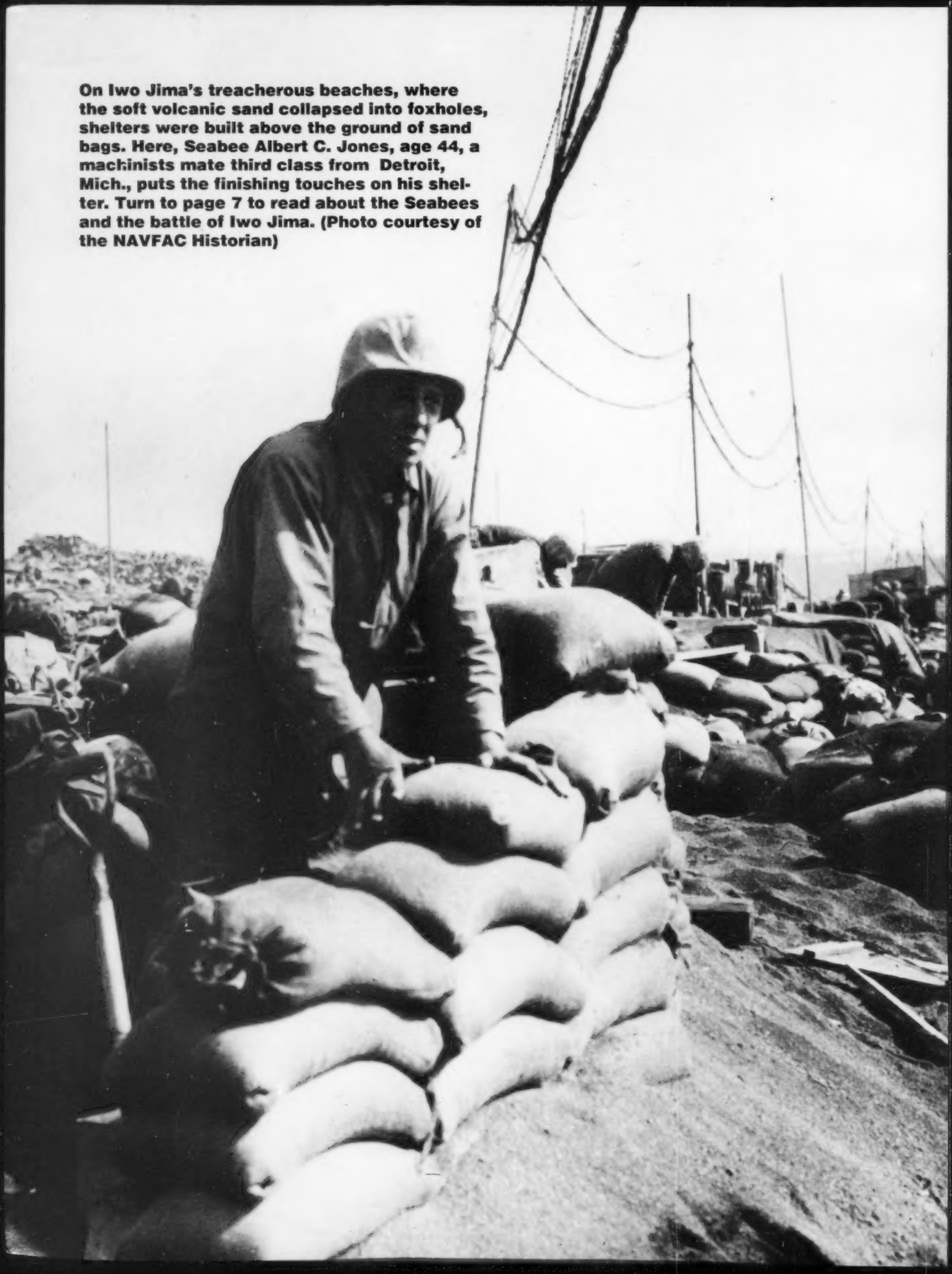
NAVY CIVIL Engineer
Winter 1995 Vol. XXXIV No. 1

# The Seabee Oil Men of Umiat No. 1



**On Iwo Jima's treacherous beaches, where the soft volcanic sand collapsed into foxholes, shelters were built above the ground of sand bags. Here, Seabee Albert C. Jones, age 44, a machinists mate third class from Detroit, Mich., puts the finishing touches on his shelter. Turn to page 7 to read about the Seabees and the battle of Iwo Jima. (Photo courtesy of the NAVFAC Historian)**

**Front Cover:** "Stalin wasn't stallin'" was a popular World War II-era song recorded by the Golden Gate Quartet. The song commemorated the successful Russian Army counteroffenses against Nazi Germany late in the war. Cover art by Bill Brack, Naval Facilities Engineering Command Headquarters, Alexandria, Va.


# NAVY CIVIL Engineer

Winter 1995 Vol. XXXIV No.1



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The *Navy Civil Engineer* is published three times a year by the Naval Facilities Engineering Command, 200 Stovall Street, Alexandria, Va. 22332-2300. Telephone: (703) 325-0311, DSN 221-0311. Fax: (703) 325-4406.

**Subscriptions**
Subscriptions to the *Navy Civil Engineer* are available from New Orders, Superintendent of Documents, P.O. Box 371954, Pittsburgh, Pa. 15250-7954. Price: $6.50 per year for domestic and $8.15 for foreign.

**Address Changes**
Send address changes to editorial and business offices: Naval Facilities Engineering Command, Attn: Editor, *Navy Civil Engineer* Magazine (Code OODA), 200 Stovall Street, Alexandria, Va. 22332-2300. Telephone: (703) 325-0311, DSN 221-0311.

**Authorization**
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The *Navy Civil Engineer* is intended for the information of regular and reserve personnel of the Civil Engineer Corps, United States Navy, and key civilian employees of NAVFAC, subordinate commands, and other mission-oriented activities.


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# Two Civil Engineer Corps captains selected for rear admiral

Captains Robert L. Moeller, CEC, USN, and Michael W. Shelton, CEC, USN, have been selected for promotion to rear admiral (lower half).

**CAPT Robert L. Moeller, CEC, USN**

**CAPT Moeller** is serving as director of the Base Closure Office at the Naval Facilities Engineering Command headquarters in Alexandria, Va. He assumed that position in 1993 after completing a tour as the commander of the Western Division, NAVFAC, in San Bruno, Calif.

Raised as a Navy junior throughout the country, CAPT Moeller graduated from the U.S. Naval Academy in 1967. He served aboard the USS *Joseph K. Taussig* (DE 1030), then earned his master's degree from Stanford University in 1971.

He is a graduate of the Executive Management Program at the Pennsylvania State University and the Armed Forces Staff College.

His previous tours include deputy for management at the U.S. Naval Academy; director, Facilities and Construction, Office of the Assistant Secretary of the Navy (Shipbuilding and Logistics); director, Military Construction Division, NAVFAC; resident office in charge of construction, industrial and resident officer in charge of construction, Kings Bay at OICC Trident; production officer, Public Works Center Norfolk, Va.; senior activity civil engineer and shore facilities planning officer, Public Works Center Yokosuka, Japan; executive assistant to the Officer in Charge of Construction, Republic of Vietnam; and Alpha Company Commander, Construction Battalion Maintenance Unit 302 in Vietnam.

**CAPT Michael W. Shelton, CEC, USN**

**CAPT Shelton** is serving as commander of the 22nd Naval Construction Regiment and the deputy commander of the Second Naval Construction Brigade in Norfolk, Va. He previously served as commanding officer of Public Works Center Yokosuka, Japan, and Officer in Charge of Construction, Far East.

CAPT Shelton graduated from the U.S. Military Academy at West Point in 1967. Upon graduating, he chose to be commissioned in the Civil Engineer Corps of the U.S. Navy. He served two tours in the Republic of Vietnam with Naval Mobile Construction Battalion Nine and Naval Advisory Detachment, Danang.

Subsequent tours included aide and administrative assistant to the Deputy Chief of Naval Operations for Logistics (OP-04); head, Seabee Assignment Branch, Naval Military Personnel Command; commanding officer, Amphibious Construction Battalion Two; senior detailer and officer community manager for the Civil Engineer Corps; and head of the Acquisition Department at the Atlantic Division, NAVFAC, in Norfolk, Va.

CAPT Shelton earned a master's degree in civil engineering from the University of Illinois and a master's degree in management from the University of Arkansas. He is a distinguished graduate of the Command Staff Course at the Naval War College and has also completed the Stanford Executive Program.

# World War II Seabee oil men pioneered oil drilling in northern Alaska

**By Lee C. Gerhard**

Fifty-one years ago Kansas oil driller Lieutenant Commander William (Bill) Rex, CEC, USNR, was appointed the officer in charge of an expedition to explore United States Naval Petroleum Reserve No. 4, on the Arctic north slope. Worried about the depletion of domestic oil reserves and the specter of increasing reliance upon foreign imports, the United States turned to examine its own resources to prepare itself for self-sufficiency in time of war.

In 1944, World War II was closing, but fierce engagements were still to come. The atomic bomb had not yet fallen on Japan. But concern about future fuel needs was high, and little was known about operating under Arctic conditions.

That year personnel and materials were selected for the Petroleum Reserve No. 4 (also known as "Pet. 4") exploration. Seabees were selected for the task, and a new naval construction battalion detachment was organized—the NCBD 1058.

**In 1944, Seabees explored northern Alaska in search of oil reserves. In doing so, they invented sled trains and pioneered oil drilling in the Arctic cold and ice.**

Bill Rex, born in Missouri and a graduate of the University of Missouri, had built a drilling company out of the ashes of the depression with partner Ed Morris, and was doing "okay" in El Dorado, Kan., when the war broke out. Bill volunteered to go to war and eventually was assigned to Seabee duty with the 66th Battalion on the Aleutian Islands.

On May 8, 1944, Rear Admiral Ben Moreell, CEC, USN, proposed the expedition team to drill core holes and explore Pet. 4. President Franklin Roosevelt approved the expedition on June 2. NCBD 1058 was at sea by July 20, having had authority to cut through red tape and directly purchase all necessary supplies.

Screening of personnel for the expedition led to the appointment of Bill Rex as officer in charge because he was an experienced oil well driller. His detachment consisted of 196 Seabees and 235 Seabee stevedores, supplied to operate independently in the field for a full year.

Orders for NCBD 1058 were to the point:

> "The purpose of this expedition is to carry out exploratory work in NPR 4 (Naval Petroleum Reserve No. 4) with a view toward determining the presence of oil in commercial quantities and, if so, to establish methods by which it may best be produced and transported to a point of greatest usefulness. This mission, therefore, includes detailed geologic study, core hole drilling, deep well drilling, and overland and aerial pipeline survey. This region being virgin exploratory territory, you will be required to do your utmost to complete your task with the greatest possible amount of information of

*Lee C. Gerhard is director of the Kansas Geological Survey at the University of Kansas in Lawrence, Kan. This article is adapted from Oilman-Seabee Blazed Arctic Trail, originally printed in the July 1994 issue of the AAPG Explorer, published by the American Association of Petroleum Geologists in Tulsa, Okla.*

every type. Everything down to the most insignificant item should be recorded for future use. It is of the utmost importance that one of the products of this task be a complete record of not only the success but the failures of this first Seabee petroleum venture."

Quite a mandate for so little time, and so much significance!

Those who provisioned the expedition did so having had only tropical experience. The Quonset huts provided had plenty of mosquito netting, but no insulation. There were no maps. Bill stated, "We had no maps, so I went down to the local high school and got some geography books. Those were our only maps. That's what we knew about our destination."

"We got under way and found we had a lot of oil field experience and a chaplain, but no cook. I guessed the chaplain could cook," Bill reminisced shortly before his death. "We did a lot of things we weren't supposed to. But we drilled that damn well!"

"They gave us this beautiful soft black wool underwear. It was wonderful warm stuff. Only thing is, the first time it went though the laundry, it wouldn't fit a Barbie doll any more."

Landing at Point Barrow—skipping the planned Simpson landing area because of shallow water and swamps—Bill and his crew built a camp: first tents, then Quonsets. The natives made fun of the tents, but later were amazed at the Quonset city that grew. The first permanent building was the "Top of the World Officers Club," according to George Gryc, a participant in a companion U.S. Geological Survey expedition. The permanent camp was ready for move-in on Sept. 14, only three weeks after landing.

Point Barrow was only a staging and testing area. The real work lay 307 miles to the south.

### Wannigans and sled trains

One thousand tons of supplies and drilling equipment had to be moved overland. The inventiveness of the oil men-Seabees made short work of the transportation problem. Heavy equipment couldn't be moved over the tundra in summer, so they invented sled trains and moved in winter, constructing wannigans on conduit runners, pulled by caterpillars.

By late winter of 1945, the sled trains had been designed, built, tested, and delivered the freight. The 307 miles of sledging was along 58 miles of sea ice, 176 miles along freshwater ice, and 73 miles over tundra. An airstrip was constructed later at Umiat, which is located along the Colville River, in an area of surface anticlines.

Meanwhile the rigs were tested. Drilling in permafrost is a little different than drilling in the limestones of Kansas. Frozen drilling mud, plugged bits and ice cores were a problem, partly solved by using large oil-fueled immersion heaters in the mud tanks. Unfortunately, this caused the loss of the first rig, which burned down on its second test hole. A National 50 rig proved more serviceable. It drilled a 685-foot hole on the first try, using a flame-thrower to deice the lines, standpipe, and hoses when coming out or going in the hole. Eventually the testing discovered a small gas field at Barrow, which was used to heat the camp.

On the sled train to Umiat the first land casualty occurred, when one of two Alaskan scouts disappeared from his remote camp and was never found. Another casualty was a Seabee who dropped into the Bering Sea during unloading operations and could not be revived.

During 1945 the detachment was strengthened for its exploration duties. The main project, drilling of exploratory wells, was to commence.

***"The inventiveness of the oil men-Seabees made short work of the transportation problem. Heavy equipment couldn't be moved over the tundra in summer, so they invented sled trains and moved in winter, constructing wannigans on conduit runners, pulled by caterpillars."***

Lieutenant William Foran, USNR, formerly a USGS explorer of the mid-1920s and later an Imperial Oil Company geologist, was chief geologist for the drilling at Umiat. Foran picked the location for Umiat No. 1 on the Umiat anticline. Rigging up of the National 50 began in late May 1945, and Umiat No. 1 was spudded on June 22. The well was continuously cored to 685 feet and cored as possible below. Eventually the hole was cored to 1,257 feet. Drilling was terminated at 1,816 feet because of lack of water for drilling, the only source being a small creek nearby the location that could not supply the needed 200 barrels a day when freeze-up started.

Cement used for setting casing had to be warmed by standpipe in order to set. The crew did not have the same problems drilling through permafrost as they had during rig testing on the coastal tundra, but there were

**Opposite page:**
**LCDR William Rex. From a portrait by Rusty Huerlein, circa 1945.**

other problems. "The permafrost was 356 meters deep on the Umiat anticline (Umiat No. 6)," Gryc remembers. "The camp nearly sank out of sight and a very substantial gravel pad had to be built." The last entry in the drilling log is: "Shut down for winter, P.T.D. 1816' 16 Sept." The Navy had run out of water.

Five oil shows were logged, at 535'-555', 919'-934', 1305'-1308', 1335'-1386' and 1736'-1782'. No production test was run, and as the season ended, the atomic age started.

After V-J Day, LCDR Rex went home to Kansas, where his successful drilling business made him a leading member of the community in El Dorado, Kan., until his death in 1991.

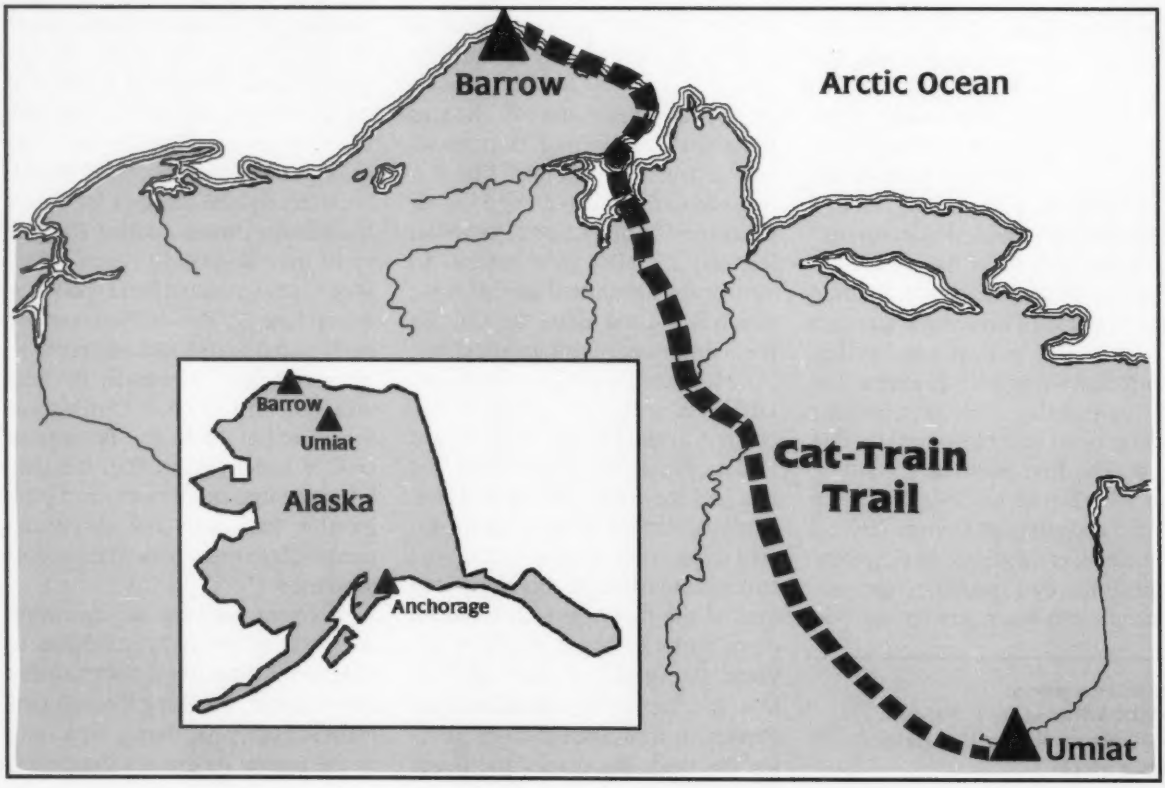
•••

What did these intrepid oil men-Seabees accomplish? Bill Rex gave some insight not found in the official records:

> "We invented a lot of stuff, including the sledge trains and how to drill in the Arctic cold and ice. We located a pipeline route to the south to get oil out if necessary. But most of all, I think, we had to learn how to survive and work under Arctic conditions. Later on they sent all kinds of people up there, and there was another reason. You see, the Russians had just kicked the hell out of the Germans under winter conditions, and we could see we would probably have to fight in Siberia some day. I think the second purpose of this expedition was to learn how to operate in the Arctic, so we could fight when we had to."

Look at the orders. "Record all details. ..." The records are heavy on survival gear and clothing, and how to make machinery work. Bill was probably right. Bill Rex helped make oil field history—he was a "Can Do!" Kansas oil man. The Arctic was open. This was only the first chapter in Arctic oil exploration. ❑

*Acknowledgments: I appreciate the help of American Association of Petroleum Geologists members and explorers George Gryc and Earle Taylor, a member of the geological mapping crew for the Navy. They filled in gaps in Bill Rex's notes and memories and contributed freely of their own memories and materials. Dr. Vincent A. Transano, command historian, Naval Facilities Engineering Command supplied several summary reports that materially assisted my writing of the story.*




Art by Bill Brack

**Activity on Red Beach on Feb. 22, 1945. (Photo courtesy of the NAVFAC Historian)**

# Seabees fought and won in Iwo Jima's engineering war

**By JO1 Luis M. Luque**

The battle of Iwo Jima is regarded as one of the classic amphibious operations in history. Perhaps because it was bitter and bloody and inspired a quote from Admiral Chester Nimitz, who said that on Iwo Jima "uncommon valor was a common virtue." Still, while the assault may have been classic in strategic terms, it met with an innovative Japanese defense. And like Guadalcanal and Normandy, Iwo Jima helped establish the important role of the naval construction battalion.

### Engineers' war

More than any previous war, World War II was an engineer's war, a war of pontoon bridges and makeshift runways, battles against mud, rock, sand and jungle. To fight thousands of miles from home, the United States would need many bases. They would have to be built in the middle of nowhere out of nothing, on desert sands, carved into cliffs, slashed from jungles, usually under enemy fire, constantly under repair. So, shortly after Pearl Harbor, the Navy created the Seabees—construction battalions organized by the Bureau of Yards and Docks.

The Seabees were recruited from America's road, dam and bridge builders, steelworkers, men who operated heavy equipment and knew how to construct warehouses, shipping docks and fuel depots—the structures our troops would need to support ships and planes far from home. It was hard and dangerous work. The civilians contracted to do it had the necessary skills, but they were prohibited by international law from carrying weapons. If they were caught with arms, they could be executed as guerrillas.

Engineering was a major reason for invading Iwo Jima. Airfields were an important link in the island-hopping chain, and we needed an emergency landing or refueling field for B-29 Superfortresses and their shorter range fighter escorts, the P-51 Mustangs. The tiny island had three airfields—two built and one under construction. Army Air Forces General Hap Arnold realized as early as July 1944 that we would need to take the island. The Marines were just finishing in Saipan and still had Guam and

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*JO1 Luis M. Luque is a journalist with Naval Mobile Construction Battalion 133.*

**The 62nd NCB's equipment near the central airfield. Members of the 62nd NCB went ashore five days after D-Day to rehabilitate this field. Despite working under heavy fire, the Seabees had the field in limited operation by March 16. (Photo courtesy of the NAVFAC Historian)**

Tinian ahead, and the allies had their hearts set on Formosa. But Formosa was too far for effective bombing missions. According to legend, Arnold drew a line on a map from the Mariana Islands to Japan; it ran straight through Iwo Jima. The island lies about 750 miles from Tokyo, roughly halfway between the Marianas and Japan. Perfect. From there, the P-51s could provide better support, and B-29s had a place to land in emergencies.

The Japanese could see what was coming and placed 21,000 men on the 12 square-mile island. General Tadamichi Kuribayashi, the Japanese commander, was determined to make the low volcanic island into a fortress. He abandoned the idea of repelling the invaders with guns on the beaches. The Marines had proved they could land successfully under fire at the Gilberts, the Marshalls, Saipan, Tinian, Guam and Peleliu. Kuribayashi knew he could not hold the island forever without the support of ships, planes and plenty of men. "Give them to me and I will hold Iwo," he said. But he also knew he would never get them. So he came up with a plan to make the invasion as costly to the Americans as possible.

He succeeded. Even though U.S. forces outnumbered the Japanese by more than three to one, Iwo Jima was the deadliest Pacific battle for the Marines. The Japanese killed more than 6,000 men. The total number of casualties was more than 24,000. This was due largely to the work of Japan's best fortifications engineers, men with combat experience in China.

### Japanese engineering

Except for Mount Suribachi, an extinct volcano 556 feet high at the island's southern tip, Iwo's natural defenses were weak. But the Japanese concocted a mix of volcanic ash and cement to turn the island into a concrete honeycomb where they cam-

ouflaged artillery, mortars and anti-tank guns. The walls of the bunkers were four feet thick and steel reinforced. Miles of tunnels ran underneath airstrips, especially in the north, linking positions as far apart as a half a mile.

Engineers and laborers wired caves for electricity, some big enough to hold a few hundred soldiers. They built several levels of defenses in many of the hills, and moved command posts as much as 75 feet underground. Mines, ditches and booby traps stood in the way of the invasion force on the beaches and all travel routes.

Kuribayashi's plan was to hold fire until the Marines were 500 yards inland. At that point they would open with automatic weapons near Chidori Airfield. Artillery support would come from Suribachi in the south and on the Motoyama plateau in the north. Underground installations in the northern center of the island would provide the main defense. Kuribayashi would enforce strict fire discipline so the defenders could last for months if necessary.

Weapons and ammunition were to be conserved to the utmost even though they had plenty. They would store three to six months of food because he knew not to count on supply shipments. They also had plenty of radios, fuel and rations. What they lacked, what had always lacked on this island of sulfur and volcanic ash, was fresh water. Kuribayashi decreed strict rationing for weeks before the invasion.

**[NCB 133's] casualties were heavy, the worst of any Seabee battalion in the war. That first afternoon, two officers and 37 enlisted men were killed, and 137 were evacuated because of their wounds.**

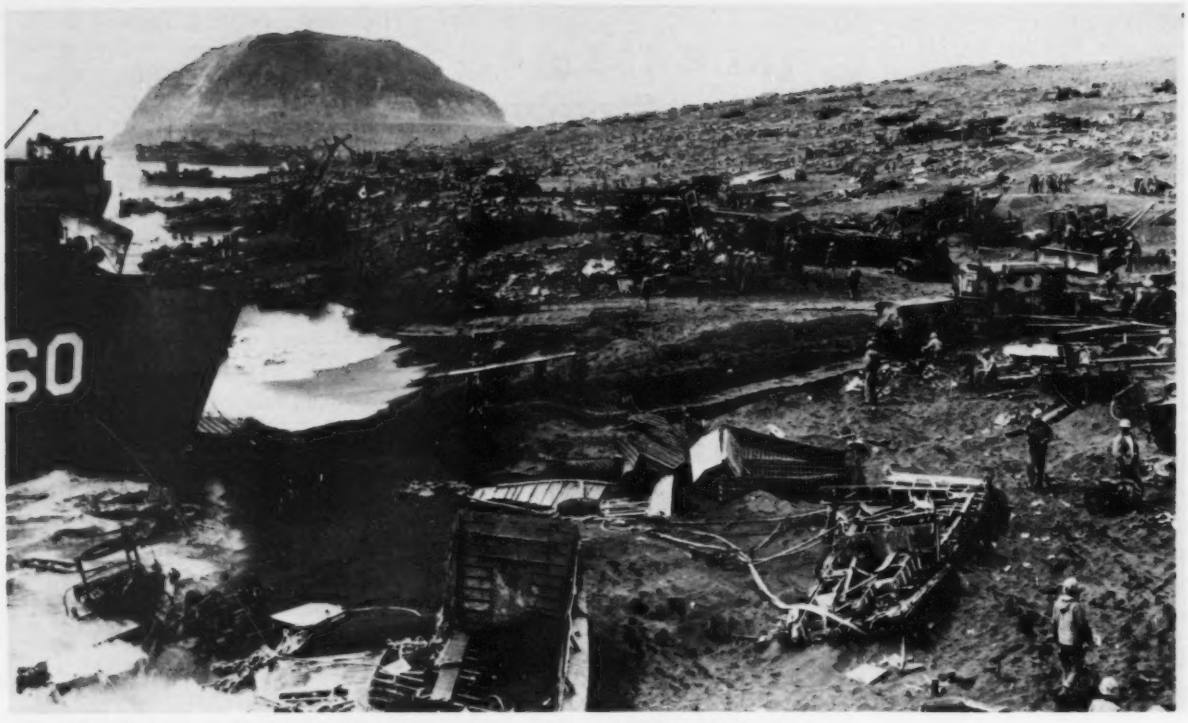
The plan violated all Japanese military doctrines and although it was not popular, it came to be accepted as inevitable. Officers opposed to the idea were transferred and replaced until finally the defense was united to die together. The Japanese knew they were doomed. It only made them more determined.

### The invasion

For weeks beforehand, American planes bombed the island to little effect. Most of the defenses were still intact by D-Day. As the attack began, Feb. 19, 1945, the thought of dying may have escaped the minds of many a Japanese soldier because the plan worked to perfection. The first line of defense was the beach itself. The water near the shore was deep and violent. And the sand was too soft even for tracked vehicles to maneuver easily. Many were immobilized by the sand or stalled by the water, others were simply rolled over by the waves. Still, U.S. forces met only occasionally with light enemy fire.

They must have thought their task would be a breeze. "There's something screwy here," remarked Marine Corporal Leonce Olivier, remembering how the first assault wave was shelled at Tarawa. But once the beaches were crowded with men and machine, Kuribayashi launched his defense in earnest. The Japanese be-

**Seabees pave the parking area on the central airfield in August 1945. (Photo courtesy of the NAVFAC Historian)**



**The East Beach on Feb. 22. (Photo courtesy of the NAVFAC Historian)**

gan a fierce artillery barrage, stunning the Americans. Their defenses were such that they could cover the whole island with rounds at once if necessary. Tarawa was nothing compared to this. "You could've held up a cigarette and lit it on the stuff going by," Colonel Justice Chambers recalled.

### NCB 133 joins invasion force

It was under these circumstances that the 133rd Seabee battalion joined the Marines in the main invasion force for the first time in the Pacific. The battalion was brought ashore during the assault phase.

The 133rd Seabees, all 1,032 of them, led by officer-in-charge Commander Raymond P. Murphy, CEC, USNR, were on the beach by 4 p.m. The battalion acted as a shore party maintaining supply lines to the Fourth Marine Division. When the Japanese struck, the Marines found safer territory by moving further inland. But the Seabees were stuck on the beach unloading cargo and ammunition, preparing roadways and moving equipment. As the Marines continued to move inland, the men of the 133rd kept them supplied. They also found and destroyed mines.

By the end of the first day, more than 30,000 men were ashore. The Marines' Fifth Division had split the island in the south, cutting off Mount Suribachi from the main defenses in the northern center. But guns in Suribachi's caves, and mortars near one of the airfields, continued to rain on Navy support force ships, and on the beach, where NCB 133 Seabees were still unloading cargo. The Japanese viewed this beachhead burgeoning with men and equipment as the U.S. forces' "center of gravity." If they could destroy the beachhead and cut off the Marines, the invasion would be a failure.

The battalion's casualties were heavy, the worst of any Seabee battalion in the war. That first afternoon, two officers and 37 enlisted men were killed, and 137 were evacuated because of their wounds. Tending the wounded took others out of the battle. As a result, the battalion was virtually out of commission for several days. It was the last time an entire battalion of Seabees were included in the first wave assault.

The whole point of the invasion was to repair the three bombed-out runways and set up an air base on the island as quickly as possible, as they couldn't afford to lose that many Seabees.

Several days later came the 31st NCB, the 62nd NCB, Companies A and B of the 70th NCB, and a detachment from the 90th NCB, all under the command of the Ninth Naval Construction Brigade. They were joined still later by the 8th NCB, the main body of the 90th NCB, the 95th NCB, the 23rd Special NCB, a detachment of the 301st NCB, and the 106th NCB.

***"This," said the Seabee boss, Captain Robert C. Johnson, CEC, USNR, "is the most expensive piece of real estate the United States has ever purchased. We paid 550 lives and 2,500 wounded for every square mile of this rock. Pretty expensive."***

(The 106th NCB joined a small detachment of the 106th which had landed with the Marnes on Feb. 15.)

Inch by inch, cave by cave, after 36 days of hell, the Marines took over the island. They had expected the battle to last two or three weeks at the most, but the Japanese fought nearly to the last man. Meanwhile, the Seabees had begun rehabilitating the island's three airstrips as soon as they were taken.

After the first two weeks, they worked day and night. Until then, enemy fire prevented them from working after dark. But even after the island was declared secure, they still had to contend with sporadic sniper fire. Hundreds of Japanese were still operating on the northern part of the island.

By early April, some 7,000 Seabees were working 10-hour shifts, seven days a week on Iwo Jima. They moved more than 3 million yards of earth, leveling Motoyama central plateau for a giant aerodrome. The main runway, 10,000 feet long, was the longest in the Pacific. Besides the runways, they paved more than 55 miles of roads.

Reorganizing after D-Day, the battalion assembled the rock crushing plant, crushing more than 60 tons per hour. They also built an asphalt batch plant that produced a total of 150,000 tons of asphalt-concrete, working at the rate of 130 tons per hour. They also laid more than 6,000 feet of drainpipe, and placed more than 4,000 feet of conduit.

The Japanese realized that without the quarry or batch plant, the U.S. could not achieve its final objective. As a result, the 133rd again became the focus of their attacks. More than 200 members of the battalion were awarded Purple Hearts. Ten earned Bronze Stars. The battalion won the Navy Unit Commendation for its work on D-Day and the construction that followed.

Land-based fighters from Iwo Jima accompanied the B-29s to Japan on April 7, for the first time. The Seabees had succeeded in making Iwo Jima the great airfield they intended it to be. By the end of the war, more than 2,200 B-29s with some 24,000 crewmen had used the Iwo Jima emergency airfields. But it cost us.

"This," said the Seabee boss, Captain Robert C. Johnson, CEC, USNR, "is the most expensive piece of real estate the United States has ever purchased. We paid 550 lives and 2,500 wounded for every square mile of this rock. Pretty expensive." But Fleet Admiral Ernest King would later say that the "lives saved exceeded lives lost in the capture of the island itself." ❑

## The 133rd was not alone

Although this article focuses on NCB 133 in the assault on Iwo Jima, other Seabee battalions participated in the battle. Three other Seabee battalions also were awarded the Navy Unit Commendation for their performance during Iwo Jima—the 31st NCB, the 62nd NCB and the 23rd NCB.

The **31st NCB** had shore parties on the beach to help unload cargo for the Marines on D-Day, Feb. 15. The entire battalion was ashore to begin rehabilitating the south airfield. They returned it to operation by March 11, even though they were operating under heavy fire.

The **62nd NCB** went ashore five days after D-Day to rehabilitate the central field. Despite enemy fire, the battalion members had the field in limited operation by March 16.

Finally, Companies A and B of the **23rd Special NCB**, a mainly black stevedoring battalion, were also decorated for their participation in the assault on Iwo Jima. Several small groups of Seabees from the 23rd Special went ashore on D-Day to unload supplies for the Marines under enemy fire. The remainder of the assault echelon landed four days later to unload cargo under extremely hazardous conditions. The rest of the battalion arrived at Iwo Jima and debarked early in March. Despite high seas and enemy fire, the 23rd Special unloaded nearly 98,000 tons of cargo on Iwo Jima in March 1945.

# Earthquake preparedness can prevent disasters

**By CDR Carl Nelman, CEC, USNR, P.E.**

Preparation for the "next big earthquake" is always timely, as the January 1994 earthquake in Southern California reminds us. Approximately every four years a major earthquake occurs in the western region of the United States. In the past five years alone Californians have seen several large earthquakes: the October 1989 Loma Prieta; the April 1992 Mendocino; the April 1992 Desert Hot Springs; the June 1992 Landers and Big Bear; and the January 1994 Northridge. The Loma Prieta earthquake caused major damage to Northern California population centers, and the Northridge earthquake caused major damage to Southern California population centers.

Over the past three years, during my annual naval reserve training, I have performed seismic adequacy reviews at naval facilities in the San Francisco Bay, San Diego and Pearl Harbor regions. I assessed the potential hazard of commodities, or components within a building, that were not necessarily designed to withstand loadings imposed by an earthquake. I conducted field walkdowns to identify commodity attributes associated with structural failure and falling.

### Seismic experience data

The walkdown program was based upon seismic experience data, which documented the performance of the equipment in conventional power plants and other industrial facilities during past earthquakes. The assumption was that the history of earthquake damage provides the most credible indication of hazards. Seismic experience data allowed the walkdown program to focus on areas most likely to be hazards. Seismic adequacy is determined by comparing the equipment to similar equipment that has survived past earthquakes.

Seismic experience data has its roots in the nuclear power industry. In late 1980, the Nuclear Regulatory Commission released Unresolved Safety Issue, USI A-46, which addressed seismic adequacy of mechanical and electrical equipment in older nuclear power plants. The A-46 program has expanded to provide requirements to utility companies operating nuclear plants. The critical mechanical and electrical equipment and systems in nuclear plants must be able to withstand postulated earthquakes.

Typical mechanical systems consist of pumps, piping, control valves, heat exchangers and tanks. These systems are powered and controlled by transformers, switchgear, motor control centers and instrumentation panels. Over the years, only a few manufacturers have supplied this equipment. The equipment design has changed little since the early 1950s.

The seismic experience data base documents more than 40 sites that have experienced large ground motions and seismic accelerations from major earthquakes. These strong motion studies are generally focused on the most heavily shaken geographic regions within the earthquake zone of influence. These sites include power generating stations, electrical substations, oil refineries, chemical plants, water pumping plants and other industrial facilities. The few instances of damage were generally

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*CDR Carl R. Nelman is attached to the Naval Reserve Civil Engineer Corps Volunteer Training Unit 1945 in Santa Ana, Calif.*

related to absent or inadequate anchorage. This equipment was typically functional after the earthquake.

Seismic experience data has been widely used in demonstrating the seismic adequacy of nuclear plant safety-related equipment and non-safety related piping, tubing, conduit, cable trays, HVAC ducting and other mechanical systems and equipment.

As visual identification of critical attributes is the program key, the review can continue very quickly. When the seismic adequacy of a commodity is questionable, a simple analytical check can be performed. Those commodities that are inadequate generally require a minimal upgrade.

•••

The use of seismic experience data provides an accepted method to rapidly identify and evaluate those commodities most likely to be earthquake hazards. Screening criteria identify attributes that have demonstrated good seismic performance and describe situations or configurations that have performed poorly. Commodities with seismic vulnerability are then identified using the screening criteria.

The implementation of long-term solutions to a disaster whose actual time of occurrence is unknown cannot easily be evaluated by traditional cost-benefit studies. Recommended modifications, when implemented, may only be needed once every decade, perhaps once every generation. But these modifications provide excellent future disaster recovery benefits as well as providing possibly unquantifiable long-term cost savings. These cost savings are generally those related to inflationary cost increases of time and materials for the repair or replacement of damaged facilities.

Damage mitigation to existing structures and installed mechanical equipment is a primary benefit of modifications. The modifications and upgrades will increase the potential for after-quake survivability and functionality of installed systems. The modifications and upgrades are also cheaper than the high cost of repair after an earthquake. In addition, the possibility of loss of service to the customer after the earthquake is reduced.

Significant employee safety concerns during the earthquake are also reduced by implementation of the recommendations. Obviously, heavy or hot or dangerous or pressurized equipment pose extreme safety hazards during a natural disaster. These modifications promote better morale by positively demonstrating command concern for individual safety. ❑

Art by Bill Brack

"The equipment at industrial sites was typically functional after earthquakes"

Note: For more information about earthquake preparedness, see the Navy's *Earthquake Preparedness: Mitigation and Recovery from Earthquake Damage to Lifeline Utilities at Navy Facilities* (document number TM-51-89-08). The most recent guidance on identifying hazardous non-structural components within a building is included in the Federal Emergency Management Agency (FEMA) document number 178, *NEHRP Handbook for the Seismic Evaluation of Existing Buildings*. See also Executive Order Number 12941, *Seismic Safety of Existing Federally Owned or Leased Buildings*.

**Lieutenant Christian C. Decker, CEC, USN, (left) meets with his then-boss, Rear Admiral Thomas A. Dames, CEC, USN, commander of the Atlantic Division, Naval Facilities Engineering Command. (Photo by John Peters, LANTDIV)**

# Do you want a challenging and rewarding job? Become an aide!

## By LT Christian C. Decker, CEC, USN

Service as an aide is frequently hectic, sometimes misunderstood, but always interesting. Unlike any other doctrinal naval job, the position of aide often lacks written instruction and is completely predicated on satisfying your boss. In the aged spirit of "who cares what the aide thinks," very little has been written about aides through history. Service as an aide, however, can be challenging and rewarding.

During my tour as aide to the commander, Atlantic Division, Naval Facilities Engineering Command, the question I was most frequently asked was "how do you become an aide?" Among the Navy's civil engineers, the aide selection process parallels our slating and selection of architect and engineer firms. Junior officers are slated by the detail office based on their good record, command recommendation, experiences, qualifications and geography.

Each slate of officers is reviewed by the three active duty Civil Engineer Corps flag officers entitled by their position to have an aide on their staff. Flag officers often select their aide based on very personal criteria. In many instances, flag officers choose junior officers who may not even be slated but who otherwise are seen as someone with whom they would like to serve. In my estimation, flag officers consider criteria such as loyalty, tact, flexibility, alertness and stamina to be extremely important. Ultimately, in selecting one's aide, a flag officer must be comfortable with spending a great deal of time, in both official and unofficial circumstances, with the person.

*LT Christian C. Decker served as the aide to the commander of the Atlantic Division, Naval Facilities Engineering Command in Norfolk Va., from February 1993 to August 1994. He is currently the staff civil engineer at Portsmouth (Va.) Naval Hospital.*

### Charge of the Light Brigade

Few stories in history are about aides. I think this is in large part due to the inconsequential nature historians consider as the aide's role. Let's face it, after the great naval battle is won and the flag officer is sitting at the table writing history, the aide is often found scurrying back to the stateroom trying to find the admiral's glasses.

The first documented use of aides was by the Egyptians, who used them to carry messages between the command staff and field units. Although using aides to convey messages to the field is still used, the aide's effectiveness has not always been without some doubt. During the Crimean War, the combined British, French and Turkish units were advancing against the entrenched Russian forces around the north valley of the Battle of Balaclava. General Fitzroy James Henry Somerset, the Baron of Raglan dispatched his aide, Captain Nolan Lewis, to the Light Brigade. Commanded by James Thomas Brudenell, the Earl of Cardigan, the Light Brigade had been held in reserve throughout the long campaign. Captain Lewis' disdain for Lord Cardigan, the urgency of the battle and Lord Cardigan's eagerness to finally fight resulted in some confusion as to the general's orders.

The Light Brigade charged against Russian artillery far down the valley and through the cross fire of many other gun emplacements. The result was the legendary and ill-fated Charge of the Light Brigade. Although Captain Lewis, the aide, tried to correct the confusion during the misdirected charge, no one would listen.

Lewis was soon killed under the heavy Russian cross fire as he tried to lead the brigade in a more logical direction.

**What does an aide do?**

The success of an aide is often predicated on how well the aide gets along with his or her boss. In general, the job can be described in four components: in the office, on the road, at social functions and in the field. In the office, aides may arrange trips, schedule appointments, greet visitors, observe protocol or convey information to and from the staff. On the road, aides coordinate travel, assure observance of the schedule and assist in matters of protocol. At social functions, aides assist with arrangements before, during and after any hosted function. In those rare times in the field, an aide sets up and assures function of the command post including movement, communications and security, as directed by the chief of staff. Not all aides do all these jobs. Each aide's duties vary, according to the requirements of his or her boss.

Conceptually, both male and female aides often act as the seventh son of the king. They often have no real power of inheritance but no one doubts the lineage. It has been said that the best aides are those who, when seeing their best laid plans come unglued by forces beyond their control, steal victory from certain failure at the last possible moment without showing emotion. Some aides act as confidants, most perform inconsequential duties, under close observation, to relieve their flag for more pressing demands. Although the aide's opinion is not often sought, a junior officer on a flag's staff has a venue to voice opinions that can count in policy formulations. Surrounded by many senior military and civilian contacts, aides, however, should be prepared for criticism and strong advice from all directions.

Despite the aide's low organizational stature, very few jobs in the Civil Engineer Corps provide so many glimpses of leadership in practice. An aide also gets to observe many jobs in the CEC. The aide gets an opportunity to see how senior leadership gauges performance among officers. Through all of this, an aide views issues confronting our senior leadership in a role of impartiality. I can think of no other job that provides these opportunities.

It has been said that the commu-

**Continued on page 32**

## Where are the aides?

The Bureau of Naval Personnel has codified those billets authorized as personal staff to flag officers. There are five naval officer billet codes that rate wearing the aiguillette:

| **Afloat** | **Ashore** |
|---|---|
| Chief of staff (9015) | Executive assistant (9930) |
| Flag lieutenant (9021) | Aide (9935) |
| Flag secretary (9082) | |

Although there are no governing Navy instructions or directives regarding which flag officers rate these billets, each new request is scrutinized against historical standards. For junior officers, the Civil Engineer Corps fills these active aide billets:

| | |
|---|---|
| Deputy Chief of Naval Operations - Logistics | Lieutenant commander |
| Commander, NAVFAC | Lieutenant |
| Pacific Division, NAVFAC | Lieutenant |
| Atlantic Division, NAVFAC | Lieutenant |

Art by Bill Brack

*"Aides should be prepared for criticism and strong advice from all directions"*

# NAVFAC recognized for leadership in using performance based service contracting

**By Ronald Deacon**
**Angela Naill**

*For the past 15 years the Naval Facilities Engineering Command has been in the forefront of using performance-based service contracting methods. The value of this type of contracting has been recognized recently by the Office of Management and Budget (OMB), which has asked all federal agencies to support performance-based contracting. NAVFAC, as a leader in using this type of contracting, has been called upon to brief and provide periodic training to other agencies in its performance-based service contracting methodologies. This article gives an overview of efforts to implement performance-based contracting governmentwide and NAVFAC initiatives in contracting.*

The federal government spends more than $100 billion per year contracting for services. These contracted services range from routine custodial and grounds maintenance to technical and management assistance. General Accounting Office studies, inspector general reports and congressional hearings indicate that these contracts often experience significant cost overruns, performance problems and performance delays.

Because of these problems, OMB asked 17 of the government's largest departments and agencies to review their service contracting programs for performance and cost effectiveness. The findings of this survey, the January 1994 Summary Report of Agencies' Service Contracting Practices, confirmed governmentwide problems regarding statements of work, contract administration and cost-effectiveness.

In May 1994, OMB asked the heads of government agencies and departments to support a project to encourage the governmentwide use of performance-based service contracting to improve the value of contracted services. OMB's Office of Federal Procurement Policy (OFPP) has the lead responsibility for carrying out this project, which was endorsed by the President's Management Council. All federal agencies were asked to:

- Make a formal endorsement of performance-based service contracting as the preferred methodology for acquiring services by contract

- Make a voluntary pledge to convert self-selected service contracts (preferably recurring) to performance-based

- Establish a high-level, agencywide task force to develop and manage the implementation of performance-based service contracting

- Select a senior level point of contact who will represent the agency on performance-based contracting matters

*Ronald Deacon is the facilities support contract manager at the Naval Facilities Engineering Command Headquarters in Alexandria, Va. Angela Naill is a contract specialist at NAVFAC headquarters.*

### NAVFAC's initiatives

Around 1980, long before the current initiative, the Naval Facilities Engineering Command recognized the benefits of performance-based service contracting. Several initiatives were implemented, including the development of guide performance work statements (GPWS) and standard training courses for writing performance work statements (PWS) and quality assurance (QA) plans.

NAVFAC's GPWS program was established primarily because of the problems the command was experiencing with its service contracts. A GPWS assists the activity specification writer in describing work in terms of the output or product required rather than how to perform the work. There are currently 23 GPWSs that cover a wide range of NAVFAC contracted services.

NAVFAC's commitment to quality performance is evident in its guidance for accepting services and determining deductions. NAVFAC includes the requirement for a Schedule of Deductions in its service contracts. This schedule, used in conjunction with the quality assurance plan developed for each contract, provides equitable and mutually agreeable terms for deductions to be taken should contractor performance be incomplete or unsatisfactory. QA plans are based upon evaluation results of contractor performance rather than the contractor's method of performance.

In addition to these initiatives, NAVFAC has developed several training courses for those involved in the acquisition and administration of service contracts. These courses are another means of ensuring the proper implementation and use of performance-based service contract-

ing methods in NAVFAC solicitations and contracts for services.

Since NAVFAC has been using performance-based service contracting methodologies for the past several years, NAVFAC was asked by OFPP to brief several other agencies on how the command does performance-based service contracting. In November 1994, representatives from NAVFAC headquarters (Captain John P. Kovalcik, CEC, USN, William Timperley, Angela Naill and Ronald Deacon) and the Southern Division, NAVFAC (Willard "Mac" Thigpen) presented a briefing to representatives from 26 federal agencies.

The briefing included a discussion of the NAVFAC guide performance work statement program; performance contract specification development; quality assurance methods; source selection process; and service contracts training. As a result of the briefing, NAVFAC has received inquiries on how we develop our performance work statements from various agencies such as GSA, NASA, Transportation, Treasury, Commerce and Federal Emergency Management Agency (FEMA). The Department of Interior has requested that the same briefing be given to their personnel. We anticipate future requests from agencies for support in the conversion of their service contract specifications to performance-based statements of work. ❑

Art by Bill Brack

*"NAVFAC was asked by OFPP to brief several other agencies on how the command does performance-based service contracting"*

# Have you considered the reserves?

If you are a young construction professional in civilian practice or civil service, or are a graduating engineering or architecture college senior who has already selected a career path, the reserve Civil Engineer Corps may have a place for you.

Qualified young professionals have the chance to achieve tremendous personal and professional satisfaction through:

- Direct appointment as an ensign, Civil Engineer Corps, United States Naval Reserve
- Challenging assignments within the reserve Naval Construction Force units in your geographic locale, in areas paralleling active duty in the Seabees or in facilities management
- Annual active duty training that is meaningful
- Development of leadership and technical skills that will carry over directly into your civilian profession
- A naval reserve retirement package for a little something extra in your old age

**Here's what you can do...**
If you are a young engineer or architect, please call or write the reserve representative listed below:

**Commander Dale Walker, CEC, USN**
Reserve Naval Construction Force
Support Command
5000 Marvin Shields Boulevard
Gulfport, MS 39501-5016

Phone: (601) 871-5090
DSN: 868-5090
1-800-782-3510

**An active duty accessions officer listed on page 23 may also be contacted for information.**

**This is what the Hario Village main gate will look like after the landscaping is completed.**

# Landscaping improvements will enhance quality of life for Navy families stationed in Sasebo

**By Margerite Fabré**

The Navy's innovative Neighborhoods of Excellence program has traveled to Japan. The Midori No Mura housing complex, which is home to 488 Navy families stationed at Sasebo, Japan, is undergoing landscaping improvements that will improve the quality of life for the residents of the complex.

Midori No Mura, which means "Green Village" in Japanese, is located in Hario Village. In the mid-1980s, the Japanese government chose Hario to be the site of an American military community. The Japanese government constructed Hario through its facilities improvement program, which provides new facilities for the U.S. military.

Located about 12 miles from fleet activities in Sasebo, Hario is a carefully planned community with homes, recreational facilities, a post office, a school and an exchange. There are 216 townhouses and four high-rise apartment buildings. Recreational facilities include neighborhood playgrounds, a swimming pool, a golf driving range, a gymnasium, an arts and crafts shop, a youth center, a movie theater and a picnic pavilion. Currently under construction are a commissary, a medical and dental clinic, a child care center and a family support center. Plans call for a water recreation area on Omura Bay.

*Margerite Fabré is head of the family housing branch at the Pacific Division, Naval Facilities Engineering Command in Pearl Harbor, Hawaii.*

## Landscaping

The view from the housing site is spectacular: It overlooks the crystal blue waters of Omura Bay and surrounding lush woodlands and scenic mountains. Before the new landscaping began, Hario Village resembled a typical government housing project, especially when compared to the nearby Huis Ten Bosch Resort. The new landscaping will make Hario a picturesque village in keeping with its Japanese name.

Japanese contractors are planting more than 275 canopy and elliptical evergreens, deciduous trees and small flowering ornamental trees along the streets and village entrance. Approximately 6,000 azaleas in various colors will also be planted around the buildings. Careful arrangement of trees and shrubs will soften the architecture and provide shade for the buildings and outdoor spaces. The azaleas will add color and aesthetic curb appeal.

When the trees and shrubs begin to flourish, Hario Village will complement Huis Ten Bosch Resort and enhance the surrounding abundantly green and natural environment. Midori No Mura residents and guests will enjoy Japanese-style tranquillity. ❑

# Total Quality Leadership Update

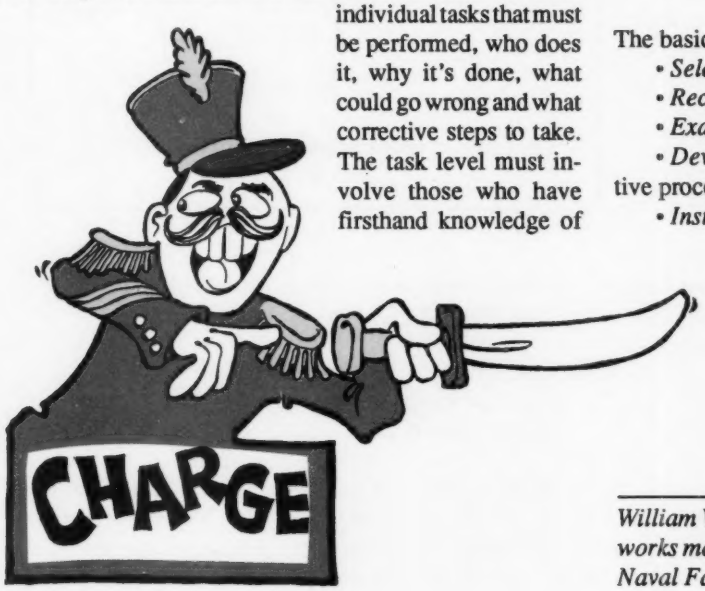
## Process flow charts: A management improvement tool

**By William W. Harper II**
**Art by Bill Brack**

Charts provide an effective way to communicate ideas between people with different backgrounds, knowledge, education and position. They serve as a management tool to help supervisors and their employees find bottlenecks in their operation and visualize how the process can be improved. *If a process or organization can be flow charted, it can be understood and managed.*

A process flow chart is a graphic representation of the work performed on a product as it passes through the stages of a process. It is a technique used to record a process sequence, which is a series of events or activities presented in the order in which they occur. The objectives of flow charting is to systematically break down a work process into its component parts, enabling the problem solver to see the task involved.

There are three levels of detail in flow charting: functional, activity and task. The functional level identifies the major functions that must be performed and their sequence. The activity level focuses on the activities that make up each function. The task level concentrates on the individual tasks that must be performed, who does it, why it's done, what could go wrong and what corrective steps to take. The task level must involve those who have firsthand knowledge of the process—the people who perform the work!




Flow charts aid in analyzing and improving the existing process or method. They are used for training, troubleshooting, testing and inspecting those processes. They help bridge the communications gap between the owners or designers of processes and the people who perform the work.

Flow charts show the logic of the situation. The ability to see the logic of sequential steps is what enables the manager to use flow charting as a management improvement tool.

The flow chart for an existing process must show the exact steps that exist, *according to the people who are performing each step*, not according to the person who supervises those steps. A flow chart that is accurate according to the supervisor or manager can also be drawn. A comparison of the two charts will highlight differences.

Once a good flow chart is drawn, and the flow chart used for training, the process can be managed.

### Flow charting techniques

The basic process study procedure is:

- *Select* the work to be studied
- *Record* all relevant facts
- *Examine* each fact critically
- *Develop* the most practical, economical and effective process
- *Install and maintain* that process

**Select.** Flow charts can be helpful in recording, examining, and understanding all the stages and subprocesses within the total process. First you need to clearly define the starting and ending points of the process to be studied.

*William W. Harper II is the program manager for public works management improvement at the Atlantic Division, Naval Facilities Engineering Command in Norfolk, Va.*

**Record.** Record each step of the process. While recording the steps, apply a questioning attitude. Even though you will make critical analysis of the process later, make notes on any ideas or inspirations you have for improvement, as they occur to you. Your *personal* interview of the process manager, the process supervisor, and the people performing the work of the process is *critically important*. Use your notes, and further consultation with the employees, to identify and examine potential process improvements.

Shapes and symbols are an important part of flow charts. The fewer symbols used, the easier the flow chart will be to understand. Symbols represent actions or events, rather than paragraphs of text. However, some text is still required to clarify and explain items. Each type of shape can represent a specific type of operation (for example, a diamond shape usually represents a decision point).

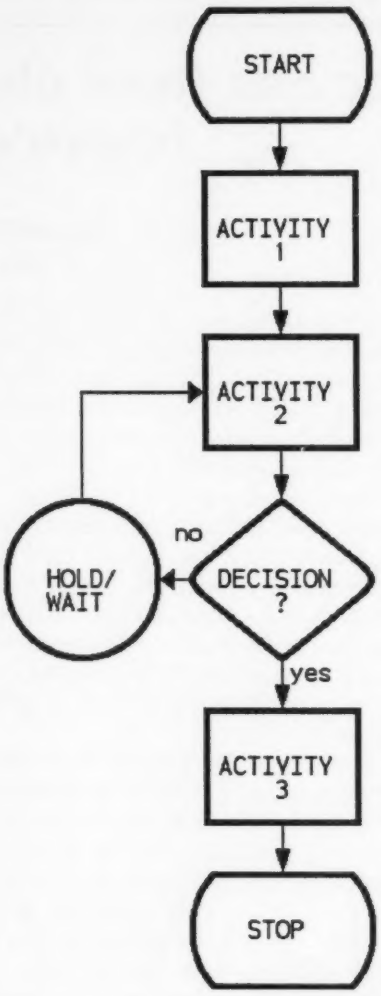
The shapes and their meaning, as used in Public Works Management Improvement (PWMI) flow charting are universally accepted symbols: a race track (oval), a rectangle, a circle and a diamond. The race track symbol is used to indicate start or stop process actions. The rectangle is an activity, such as filling out the equipment log book after a use or service. The circle represents delays in the process. The diamond represents a decision point in the process. (For example, when a service call is received, a decision must be made: Is it an emergency?) Consistency in your use of symbols is more important than the actual symbols you use.

**Examine.** The next step is to analyze each of the steps by asking five questions: what, where, when, who, and how, and then ask why to each one. Concentrate on each question in the following sequence:

- Purpose. *What* is the purpose? *Why*? Why should it be done? What would happen if it weren't done? Would other methods accomplish the same result? What should be done?

- Place. *Where* is it done? *Why*? Are there other places where it might be performed better? Where should it be done?

- Sequence. *When* is it done? *Why*? Could it be done in a different sequence or at another time more economically? When *should* it be done?




**This is a model process flow diagram.**

Chart by William W. Harper II

- Person. *Who* does it? *Why*? Who else could do it? Who should do it?

- Means. *How* is it done? *Why*? Are there other safer and more efficient ways of doing it? How should it be done?

**Develop.** Here are four general approaches to aid in developing improvement possibilities. They are presented in descending order of importance based on the potential for increased productivity.

• *Eliminate* all unnecessary operations or elements. It is not unusual to find unnecessary operations being performed because of lack of communication or sheer habit. In general, no preparation or investment in this type of improvement is needed. It is the best improvement that can be made among these four actions, and the most important.

• *Combine* operations or elements. Different operations performed at different locations by more than two persons may be assigned to one person or to the same work location.

• *Rearrange* operations or elements. The most probable improvement in this approach is to change the sequence of operations or elements. Change of work area or group composition should also be examined.

• *Simplify* the necessary operations or elements. After examining the improvement possibilities, ways to simplify and improve the individual operations or elements should be considered. This approach seeks not only to make manual operations more effective but also to improve the effective use of tools and equipment.

**Install and maintain.** Finally, draw a new flow chart for the suggested improvement. Get the concurrence of those involved and implement and maintain the improvements. Maintaining the improvements does not mean "keep this one process going," it means do not allow backsliding to the old methods and continually look at the process for improvement.

### Final thoughts

Encourage employee teamwork as necessary to help do the analysis and develop ideas. The people doing the work can provide the best analysis, and answer the question why something is done a certain way. Let them come up with a better way! They live the process every time it is performed; they have a vested interest. Employee involvement in change is crucial for success! ❑


# Attention all engineering students!

You can secure your future in the Civil Engineer Corps, where qualified engineering students may earn more than $1,200 per month. If you are interested in qualifying for the Civil Engineer Corps, contact one of these officers for more information:

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Washington, DC 20370-4413
(703) 614-3635/6

•

**LT Gary L. Wick, CEC, USN**
EFA WEST, Code 09L1
900 Commodore Dr.
San Bruno, CA 94066-2402
(415) 244-2005

•

**LT Paul F. Webb, CEC, USN**
EFA Chesapeake, Code 09PR
Washington Navy Yard
Washington, DC 20374-2121
(202) 433-7285

**OR CALL:**
**1 (800) 327-NAVY**

# Guam military salutes Seabee Betty on her 60th birthday

**By JO1 Ron Schafer, USN**

Living legends are few and far between these days. So, when one of them has a birthday, it is an event worthy of celebration, especially when that legend is Seabee Betty. Arguably, there isn't a Seabee alive today who, if they've ever been to Guam, has not been a recipient of the type of Chamorro hospitality that this island's unofficial ambassador of goodwill has made famous.

On Sept. 3, 1994, the hospitality was returned in abundance as Captain Gary M. Craft, CEC, USN, commanding officer, U.S. Navy Public Works Center Guam and Officer in Charge of Construction, Marianas, hosted a lavish fiesta at the U.S. Fleet and Industrial Supply Center's beach to celebrate Seabee Betty's 60th birthday. Born Sept. 10, 1934, Betty Chargualaf Peredo is the second of four children. Raised in a loving and traditional Chamorro family, Betty developed a strong sense of hospitality and goodwill which led her to devote her life to what she describes as a belief in "freedom and family unity among all people."

As an adult, she began to reach out to U.S. Navy Seabees on Guam in an attempt to ease the hardship of their separation from loved ones. Over the past 40 years, Seabee Betty has fed literally thousands of Seabees at fiestas held regularly at her home in Yona. Betty's warm and friendly personality earned her the friendship and respect of not only the Seabee community, but Navy families, military personnel and dignitaries around the world.

Hundreds of family members, Seabees and friends turned out for the birthday celebration which included a fiesta-style cookout and live music by the Navy rock band. Gifts, letters and presentations were made to honor Seabee Betty by those in attendance and for others who could not attend. Invitations to the birthday fiesta were sent throughout the Civil Engineer Corps and Naval Construction Force resulting in a stream of letters from friends and well-wishers including "The King Bee"—Rear Admiral Jack E. Buffington, CEC, USN, commander, Naval Facilities Engineering Command and chief of civil engineers.

"There are thousands of retired and active duty Seabees around the world who have benefited from your kindness and longstanding hospitality," wrote RADM Buffington in a letter. "A deployment to Guam has always included a fiesta at Seabee Betty's and we all recognize and appreciate your unselfish support. On this special occasion, please accept our heartfelt thanks and respect for all you've done." ❑

**Captain Gary M. Craft, CEC, USN, presents Seabee Betty with a letter of recognition from Rear Admiral Jack E. Buffington, CEC, USN, commander, Naval Facilities Engineering Command and chief of civil engineers. CAPT Craft is the commanding officer of Public Works Center Guam and Officer in Charge of Construction, Marianas. (Photo by Miriam S. Gallet, public affairs officer, PWC Guam and OICC Marianas)**

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*JO1 Ron Schafer is a journalist assigned to Naval Mobile Construction Battalion One.*

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# 86 Complete basic training at CECOS

Eighty-six members of basic classes 203 and 204 have graduated from the Naval School, Civil Engineer Corps Officers, Port Hueneme, Calif. Course work is comprised of eight weeks of specialized training pertinent to the Navy's needs for shore installation engineering, public works management, construction contracting and administration, and Seabee operations.

## Basic Class 203

Graduation: Sept. 28, 1994

**ENS Christopher G. Adams**
BSCE/Univ. of Virginia
to EFA West Cont. Office,
NAS Lemoore, Calif.

**ENS Gregory B. Ames**
BS Sys. Eng. / USNA
to NAF, El Centro, Calif.

**ENS Matthew J. Anderson**
BSE / Duke University
to NAF, Adak, Alaska

**ENS Brantley F. Bain**
BSME / Clemson Univ.
to NAVSTA Pearl Harbor,
Hawaii

**ENS Joseph L. Banach III**
BSEE / The Citadel
to NAES,
Lakehurst, N.J.

**ENS Elicia A. Bass**
BSCE / Northeastern Univ.
to SUBASE,
New London, Conn.

**ENS Gregory M. Blake***
BS Nav. Arch. / USNA
to NMCB 40,
Port Hueneme, Calif.

**ENS Frank G. Cervasio**
BSME / RPI
to EFA West Cont. Off.,
Point Mugu, Calif.

**ENS Joseph P. Cohan**
BS Env. / USC
to SOUTHWESTDIV
Cont. Off.,
Camp Pendleton, Calif.

**ENS Kimberly A. Congdon***
BSME / Univ. of Alabama
to MCCDC, Quantico, Va.

**ENS Nicki L. Dailey**
BS Arch. / Univ. of Kansas
to SOUTHWESTDIV
Cont. Off.,
Camp Pendleton, Calif.

**ENS Roland J. Deguzman**
BS Sys. Eng. / USNA
to NAS North Island, Calif.

**ENS John M. Farthing**
BSIE / N.C. State Univ.
to MARCORPS Base,
Camp Pendleton, Calif.

**ENS Ralph H. Field**
BSCE / The Citadel
to NAS Lemoore, Calif.

**ENS Shirley G. Flynn**
MSME / Univ. of Kentucky
to OICC Marianas, Guam

**LT Jeffery P. Foltz**
BSOE / USNA
to NRL,
Washington, D.C.

**ENS Kristina E. Franson**
BSCE / Clemson Univ.
to NETC Newport, R.I.

**ENS Eric J. Haase**
BSEE / Santa Clara Univ.
to NMCB 133,
Gulfport, Miss.

**ENS Charles R. Hall**
BSEE / Old Dominion Univ.
to EFA CHES Cont. Off.,
Dahlgren, Va.

**ENS Peyton W. Hall**
BSME / Univ. of Texas
to NAVSTA San Diego,
Calif.

**ENS Douglas E. Holt**
BSM / BMSE / Duke Univ.
to PACDIV Det MIDPAC,
Pearl Harbor, Hawaii

**ENS Michael A. Horst**
BSCE/Georgia Tech.
to NAS Meridian, Miss.

**LTJG Andrew E. Kettering**[Φ]
BS Aerospace / USNA
to EFA CHES Cont. Off.,
Annapolis, Md.

**ENS Phillip E. Knauss**
BCE / Auburn Univ.
to NAVSUPPOFF,
La Maddalena, Italy

**ENS Peter J. Maculan**
BS Arch. / Catholic Univ.
to LANTDIV Cont. Off.,
Guantanamo Bay, Cuba

**ENS Eve E. Marhafer**
BSE / Duke Univ.
to NAVSECGRUACT,
Edzell, United Kingdom

**ENS Rodney A. Martin**
BSME / Carnegie-Mellon
University
to PWC San Diego, Calif.

**LT Barry A. Maxon***
BSCE / VMI
to PWC Great Lakes, Ill.

**ENS Patrick J. McCall**
BSCE / Kansas State Univ.
to PWC San Diego, Calif.

**ENS James W. McRae**
BSME / Univ. of S.C.
to NAF, Washington, D.C.

**ENS Robert McGunnigle**
BS Sys. Eng. / USNA
to EFA CHES,
Washington, D.C.

**ENS Patrick D. Meagher**
BSCE / USC
to OICC MIDPAC,
Pearl Harbor, Hawaii

**ENS James G. Meyer***
BSME / Univ. of Wisconsin
to NMCB Three,
Port Hueneme, Calif.

**ENS Damon D. Milby**
BSEE / Prairie View A&M
LANTDIV Cont. Off.,
Cherry Point, N.C.

**ENS Eric C. Nesbit***
BSCE / Duke Univ.
to NAVHOSP,
Oakland, Calif.

**ENS Paul R. Ober**
BSEE / Oklahoma State
to SOUTHDIV Cont. Off.,
Jacksonville, Fla.

**ENS Sean P. O'Donnell**
BSCE / Catholic University
of America
to NAVSECGRUACT,
Adak, Alaska

**ENS Erik L. Ostmo**
BS Sys. Eng. / USNA
to EFA NW,
Silverdale, Wash.

**ENS Patrick L. Padgett**
BS Sys. Eng. / USNA
to NAWC, CENAC Div.,
Lakehurst, N.J.

**ENS Scott P. Raymond**
BS Sys. Eng. / RPI
to NAF Adak, Alaska

**ENS Whitley H. Robinson***
B. Arch. / Univ. of Miami
to OICC MED Cont., Off.,
Rota, Spain

**ENS Barry C. Sass**
BSME / George
Washington Univ.
to EFA CHES Cont. Off.,
Washington, D.C.

**ENS Mikhael H. Ser**
BSCE / Univ. of Florida
to EFA CHES Cont. Off.,
Quantico, Va.

**ENS Jonathan B. Siegel***
BSCE / Duke Univ.
to NORTHDIV Cont. Off.,
New London, Conn.

**ENS Mark E. Spencer**
BSME / USNA
to EFA WEST Cont. Off.,
China Lake, Calif.

**ENS Demetrio N. Tasheuras**
BSCE / Univ. of Maryland
to LANTDIV Cont. Off.,
Cherry Point, N.C.

**ENS Ronald G. Terrell**
BSCE / Purdue Univ.
to NMCB Seven,
Gulfport, Miss.

**LT Jean A. Weniger***
BSME / MIT
to OICC NAVFAC Cont.
Agana, Guam

**ENS Ra Yoeun**
BSME / VMI
to SOUTHDIV Cont. Off.,
Barksdale AFB, La.

* With Distinction
★ Class Commander
Φ First in Class

# Basic Class 204

Graduation: Dec. 21, 1994

**ENS Keith W. Barton***
BSCE / Cornell Univ.
to NAVPGSCOL,
Monterey, Calif.

**ENS Kristin M. Batchelder**
BS Che. / Univ. of Idaho
to CBC Port Hueneme,
Calif.

**ENS Brett A. Brenize**
BSCE / Penn State
to EFA WEST Cont. Off.,
Point Mugu, Calif.

**ENS Bradford T. Cope**
BS Mech. Eng. /
Youngstown State Univ.
to EFA WEST Cont. Off.,
NAS Fallon, Nev.

**ENS Christopher M. Costa***
BSCE / Univ. of Conn.
to SOUTHWESTDIV,
San Diego, Calif.

**ENS Leanne K. Currie**
BSEE / Northwestern Univ.
to LANTDIV Cont. Off.,
Yorktown, Va.

**ENS Carter C. Dowdy**
BSME / Tulane Univ.
to SOUTHDIV Cont. Off.,
Pensacola, Fla.

**ENS Michael P. Doyle**
BSCE / Univ. of Florida
to PWC Pensacola, Fla.

**ENS Susannah T. Finch**
BSCE / Northwestern Univ.
to NMCB Four, Port
Hueneme, Calif.

**ENS Eric T. Fleckten**
BSCE / Stanford Univ.
to PWC San Diego, Calif.

**ENS Michael R. Fohner**
BSME / Villanova Univ.
to LANTDIV Cont. Off.,
Yorktown, Va.

**LT Vincent E. Fragomeni*^◊**
BSOE / USNA
to EFA WEST Cont. Off.,
Point Mugu, Calif.

**ENS Robert J. Gilpin**
ME / Texas A&M
to EFA WEST Cont. Off.,
China Lake, Calif.

**CWO2 James Greene**
AA / Univ. of Maryland
to NMCB One,
Gulfport, Miss.

**ENS Bradley A. Hans**
BSCE / Univ. of Nebraska
to PWC Guam

**CWO2 Daniel L. Hermeson***
BSLA / Univ. N.Y.
31st NCR,
Port Hueneme, Calif.

**ENS Douglas K. Helmann**
BSE / Montana State Univ.
COMNAVDIST
Washington, D.C.

**ENS Christine M. Kielpinski**
BSCE / Mich. Tech. Univ.
to EFA WEST Cont. Off.,
NAS Lemoore, Calif.

**ENS Jeffrey J. Kilian***
BSCE / Univ. of San
Diego to NMCB Three,
Port Hueneme, Calif.

**ENS Matthew T. Knight**
BSCE / Univ. of Nebraska
to NAVAIRWPNSTA,
China Lake, Calif.

**ENS Lance A. Lee**
BS Chem. Eng. / Univ. of
Texas
to MARCORBASE,
Camp Lejeune, N.C.

**ENS Nathan D. Levins**
BSEE / Okla. State Univ.
to CBC Port Hueneme,
Calif.

**ENS Scott D. Maxwell**
BSMS / Northwestern Univ.
to EFA NW Cont. Off.,
Adak, Alaska

**ENS Paul S. Peterson**
BSCE / Mich. Tech. Univ.
SOUTHWESTDIV Cont. Off.,
Camp Pendleton, Calif.

**ENS David P. Ronka**
BSCE / Tufts University
to LANTDIV Cont. Off.,
Guantanamo Bay, Cuba

**ENS Daniel L. Scott Jr.**
BSEE / Villanova Univ.
to EFA MW Cont. Off.,
Great Lakes, Ill.

**ENS William A. Siemer**
BSCE / Univ. of Cincinatti
to COMSTRATCOMMWING
One, Tinker AFB, Okla.

# Reserve officers in Basic Classes 203 and 204

These reserve officers were part of basic classes 203 and 204. Those who were part of basic class 203 attended during the period July 11, 1994, through July 27, 1994. Reservists in basic class 204 attended during the period October 11, 1994, through October 27, 1994.

**ENS William J. Simpkins**
BSCE / Auburn Univ.
to SOUTHDIV Cont. Off.,
Kings Bay, Ga.

**ENS Clifford A. Smith**
BSME / Georgia Tech.
to NAVSTA, Guantanamo
Bay, Cuba

**ENS William A. Sprauer***
BSME / Univ. of Cincinnati
to PWC Norfolk, Va.

**ENS Robert Squadrito**
BSCE / Villanova Univ.
to NAS South Weymouth,
Mass.

## Basic Class 203 Attendees

**ENS Michael H. Burgess**
MS Hydr. / Rutgers Univ.
to NMCB 21,
Lakehurst, N.J.

**ENS Bret D. Campbell**
BSME / Lamar Univ.
to NMCB 28,
Barksdale AFB, La.

**LT Katherine G.S. Carretti**
BS Chem. / Penn State Univ.
to NR EEU-PAC,
San Diego, Calif.

**ENS James D. Trewin**
BSCE / Texas A&M
to SOUTHWESTDIV,
San Diego, Calif.

**ENS Matthew P. Tucker**
BSME / Univ. of Missouri
to SOUTHWESTDIV
Cont. Off., MCAS,
El Toro, Calif.

**ENS Michael D'Arcangelo**
BSCE / Wentworth Inst.
to NMCB 16,
Phoenix, Ariz.

**ENS Bradley W. Darr**
BSCE / Univ. of N. C.
to NMCB 18, NRC,
Fargo, N.D.

**LTJG Robert S. DeWinter**
BSEE / Lawrence Tech.
to NMCB 26,
Lakehurst, N.J.

**ENS David S. Dietenderfer**
BSME / Univ. of Delaware
to NMCB 26,
Lakehurst, N.J.

**ENS Victor V. Velasco**
BSME / Univ. of Florida
to PACDIV DET MIDPAC,
Pearl Harbor, Hawaii

**ENS Megan J. Waggoner**
BS Arch. / USNA
to SOUTHDIV,
Charleston, S.C.

**ENS Jeffrey A. Edwards**
BSCE / Univ. of N.Y. Buffalo
to NMCB 13,
Peekskill, N.Y.

**ENS Steven J. Frederick**
BSCE / Univ. of Mass.
Dartmouth
to CBMU 202, Newport, R.I.

**LTJG William N. Herman**
B. Arch. / Cornell Univ.
to NMCB 23,
Fort Belvoir, Va.

**ENS Kyle R. Kohne**
BSEE / Gonzaga Univ.
to NMCB 18,
Seattle, Wash.

**ENS Brian L. Weinstein**
BSME / Univ. of Colorado
to NORTHDIV Cont. Off.,
Newport, R.I.

**ENS Nicolas D. Yamodis III**
BS Arch. / Univ. of Oregon
to OICC Far East,
Yokosuka, Japan

**ENS Michael A. Lukshin**
BSCE / Univ. of Alaska
to NMCB 18,
Seattle, Wash.

**ENS David G. Lyles**
BSCE / Univ. of Alabama
to NMCB 24,
Redstone Arsenal, Ala.

**ENS Lawrence J. Merola**
B. Arch. / Wentworth Inst.
to NMCB 27,
Brunswick, Maine

**ENS Richard C. Peters**
BSCE / Cal State
to NMCB 16,
Los Alamitos, Calif.

**ENS Robert E. Ruddy**
BS / CT / Phoenix College
to NMCB 16,
Los Alamitos, Calif.

**ENS John H. Skrapits**
BSCE / Lehigh Univ.
to NMCB 21,
Lakehurst, N.J.

**ENS Noel J. Smyth**
BSCE / Penn State Univ.
to NMCB 21,
Lakehurst, N.J.

**ENS Sharon L. Taylor**
BSEE / Old Dominion Univ.
to NMCB 16,
Los Alamitos, Calif.

**ENS Gregory L. Williams**
MECE / Old Dominion Univ.
to NMCB 28,
Barksdale AFB, La.

**ENS Michael W. Wolz**
MSCE / Georgia Tech
to NMCB 28,
Barksdale AFB, La.

## Basic Class 204 Attendees

**CWO2 Nestorio L. Domingo**
BS Eng. / Univ. of Calif. Northridge
to NCFSU Two,
Port Hueneme, Calif.

**ENS Vanessa P. Fojas**
BSCE / Univ. of Hawaii
to NMCRR Honolulu, Hawaii

**ENS Patricia D. Hensley**
BS Arch. / Univ. of Houston
to NMCB 24,
Huntsville, Ala.

# NEWS WORTH REVIEWING

## Four NAVFAC projects nominated for 1995 SECDEF award

Four Naval Facilities Engineering Command projects have been nominated for the 1995 Secretary of Defense Productivity Excellence Award. The projects are:

• **Developed a "minimalist" design-build approach for the Naval Facilities Engineering Service Center building. Organization: Engineering Field Activity West, San Bruno, Calif.** The "minimalist" design-build approach used in the construction of this building will result in completion approximately two years ahead of a normal schedule for construction of this type of facility. The cost savings were reduced design costs of $1.5 million and an additional $1 million after occupancy.

• **Partnering with the Environmental Protection Agency and the state of Florida to clean contaminated sites at naval bases. Organization: Southern Division, Naval Facilities Engineering Command, Charleston, S.C.** This partnering initiative achieved environmental clean-up actions in SOUTHDIV's Installation Restoration Program. Cost savings were $2.03 million.

• **Implementation of steam production improvement projects resulting in significant fuel savings. Organization: Public Works Center Norfolk, Va.** Several innovative process improvements in the PWC steam production and distribution systems were implemented, resulting in improved efficiency and better use of available fuels needed to operate the systems. The cost savings was $9 million.

• **Increased electrical service voltage to Naval Air Station North Island and the Point Loma Naval Complex, both in California. Organization: Public Works Center San Diego, Calif.** A partnering team from PWC San Diego, the Southwest Division, NAVFAC and San Diego Gas and Electric determined that increasing the volt service level at both sites would result in significant savings and increased reliability. The initiative was successfully implemented. The costs savings were $2.1 million immediately and $4.1 million in the long term.

## 1994 Moreell Medal winner named

Congratulations to Commander Michael Schaefer, CEC, USN, who has been selected to receive the 1994 Moreell Medal.

CDR Schaefer served as the Resident Officer in Charge of Construction Haiti in support of the U.S. led invasion during Operation Uphold Democracy. Arriving in Haiti on D-Day, CDR Schaefer immediately overcame arduous living conditions and an imminent danger of hostilities to provide urgent real estate and construction contract actions. Leading a 24-person ROICC team, CDR Schaefer executed more than 14 leases totaling more than 400,000 square feet of building space and 300 acres of land.

## PWC San Francisco Bay selected for Meritorious Unit Commendation

Well done to Public Works Center San Francisco Bay in Oakland, Calif. It has been selected for the Secretary of the Navy's Meritorious Unit Commendation award. PWC San Francisco military will receive a ribbon to wear, and civilians will receive a lapel pin.

This award has traditionally been given to units during wartime or disaster. PWC San Francisco is believed to be the first public works center to receive this award for excellence in mission performance.

The award recognizes the PWC's superior innovation, professionalism and effectiveness in meeting the Navy's public works support requirements during a period of unprecedented growth and during base closure. The period covered is from July 1992 through June 1994.

## PWC San Francisco Bay is honored for its employment practices

Public Works Center San Francisco Bay is receiving local and national recognition for its employment practices.

• PWC San Francisco won the Outstanding Employer, 1994 award from the Mayor of Oakland, Elihu Harris. This is the second year in a row that PWC San Francisco took the top award as a result of its strong commitment to disadvantaged youth in Oakland. PWC volunteers worked with more than 70 disadvantage youths in the summer youth employment program, instilling ideas of self-worth and promoting personal development.

• PWC San Francisco's human resources office was selected for the prestigious 1994 Human Resources Management award for excellence. The award is given by the Department of the Navy's Office of Civilian Personnel Management.

The human resources office provides services to 41 separate serviced Department of Defense activities having more than 4,300 civilian employees. These services were provided during a period of extensive expansion and then base realignment, followed by massive downsizing and, ultimately, planned closure of many facilities. Throughout this tumultuous period, the HRO team provided employees useful assistance in dealing with their personal transitions.

## Pacific Fleet Best of Type Battalions named

Congratulations to the men and women of Naval Mobile Construction Battalion Five and Naval Mobile Construction Battalion 15!

NMCB Five has been selected as the Pacific Fleet Best of Type Seabee Battalion (Active Duty). NMCB 15 has been selected as the Pacific Fleet Best of Type Seabee Battalion (Reserve).

The Battle "E" recognition signifies a high level of performance and proficiency in battle efficiency and contingency mission readiness.

NMCB Five demonstrated a dedication to total quality and continuous improvement by taking an outstanding program and making it better. In addition to a challenging homeport, the battalion had demanding deployments to Okinawa, Japan, with 12 detail sites.

NMCB 15 completed numerous fleet priority construction projects. In a constantly changing environment, NMCB 15 maintained a cohesive, highly motivated responsiveness to customers in a total quality manner.

## NAVFAC has a superb FY 94

A great team effort helped the Naval Facilities Engineering Command achieve superb results in FY 94 program execution. Together, the field and headquarters accomplished the following:

❒ NAVFAC awarded more than $5.2 billion in contract actions including:

• 104 percent of the planned FY 94 BRACON program, with many other BRAC construction projects ready for award but awaiting funds

• Approximately 76 percent of the FY 94 MCON program, equating to more than three and a half times the value executed last fiscal year

• More than 72 percent of the FY 94 defense construction program, resulting in a backlog reduction of well over $350 million

❒ Awarded $1 billion in utilities contracts

❒ Responded to BRAC requirements in an outstanding manner. From a standing start, with short timeframes and changing operational scenarios, planned and executed more than $262 million in construction

❒ Executed a record environmental program of $407 million in DERA and $293 million in BRAC environmental, both at nearly 100 percent. A major milestone was passed by investing more in base cleanup than environmental studies.

❒ Obtained full obligation of housing O&M funds, worth $655 million

❒ Obligated 86 percent of the FY 94 Family Housing Improvement Plan, worth $137 million

By Karen Fedele
Read a previous issue
Plan
Write
Get it cleared
job
The task was made difficult by the long logistics pipeline.
Endure some editing
Enjoy

The *Navy Civil Engineer* magazine welcomes contributions from readers for publication. The magazine is published three times a year for the officers of the Civil Engineer Corps and the employees of the Naval Facilities Engineering Command. This article will serve as your guide to getting published in the *Navy Civil Engineer* magazine. Editorial style, security clearances and other requirements also will be discussed.

### Talk to the editor!

So, you want to write for the *Navy Civil Engineer*. Great! The most important thing to remember is to query the magazine editor about your proposed article *before* you sit down to write it. You can write, call, fax, email or visit the editor.

The main content of the magazine is planned a year in advance, often around a theme. The editor can tell you if your proposed article fits the editorial needs of the magazine. If the article is not appropriate for the magazine, the editor may be able to help you reshape the article so it is suitable for the magazine. The editor can also alert you if an article on a similar subject already is in the works.

After you have been given the go-ahead to write the article, the editor will discuss format, editorial requirements and deadlines with you.

### Editorial guidelines

An important rule to remember is that all articles must be submitted to the *Navy Civil Engineer* magazine *exclusively*. Please do **not** simultaneously submit your article to several publications. It is considered bad form in the publication world to do so. If the editor of the magazine declines publication of your article, you may then submit your article to another publication.

On rare occasions articles will be reprinted from other publications when these articles are deemed of interest to the magazine readers.

Press releases are not printed in the magazine. Press releases are used to generate story ideas or adapted for the "back of the book" articles, such as those in the News Worth Reporting section.

Before you begin writing, read the magazine to get an idea of the style used. Keep these simple rules in mind:

- Keep sentences short.
- Keep paragraphs short.
- Be direct.
- Avoid adjectives.

Acronyms should be used sparingly. When you first use an acronym, write out what the acronym stands for. People in your office may know what the acronyms refer to, but most other readers won't. Not everyone knows that CNPs are comprehensive neighborhood plans or that JLOTS means joint logistics over the shore.

In pursuing the writing process, government personnel must, according to the vision statement of the headquarters agency, execute a writing style that is not overly complicated nor complex. Huh? That sentence is an example of how *not* to write. Write simply and avoid governmentalese.

The magazine uses a "down" style of capitalization. That is, words are capitalized only when absolutely necessary. Organization names are capitalized. Job titles aren't.

The maximum length of the articles is 1,500 words. Shorter articles

**Continued on page 32**

*Karen Fedele is editor of the Navy Civil Engineer magazine and the assistant public affairs officer at the Naval Facilities Engineering Command Headquarters in Alexandria, Va.*

## Get in touch with the *Navy Civil Engineer*

The magazine is published three times a year. Talk to the editor before submitting an article!

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**Telephone:** DSN 221-0311
Commercial (703) 325-0311
**Fax:** (703) 325-4408
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200 STOVALL ST
ALEXANDRIA VA 22332-2300

**Getting published is as easy as one, two, three**

1. Call the editor and get the go-ahead for article.
2. Write article, adhering to the editorial guidelines.
3. Submit article in hard copy form and on a computer disk. Include artwork in proper format and a completed Publication Security Review and Clearance form (NAVFAC 5720/6 (REV 10-81)).

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## *Navy Civil Engineer...*

Continued from page30

are welcomed and encouraged.

### The nitty-gritty of submitting your article

The magazine is layed out using desktop publishing, so all writers are strongly encouraged to submit their articles on computer disks. Also send a print-out of the article. The *Navy Civil Engineer* is produced using the Macintosh versions of Microsoft Word and Aldus PageMaker. However, word processing documents written in any DOS or Mac word processing program are accepted.

For those of you who are traditionalists, neatly typewritten articles will be accepted.

All articles should be double-spaced with 1-inch margins. Submit all articles to the editorial office.

### Security clearance

All articles for publication must be accompanied by a completed Publication Security Review and Clearance form (NAVFAC 5720/6 (REV 10-81)). To obtain a copy of the form, check with your command public affairs office or call the editor of the *Navy Civil Engineer*.

### Art

The submission of artwork (photographs, line drawings, charts, graphs, etc.) illustrating your article is encouraged. All artwork will be returned to you at your request.

Photos should be 5"x7" (or larger), black and white, and clearly identified. *Do not write on the photos.* Write identifying information on a piece of paper and tape it to the back of the photo. If black and white photos are unavailable, color photos or color slides will be accepted.

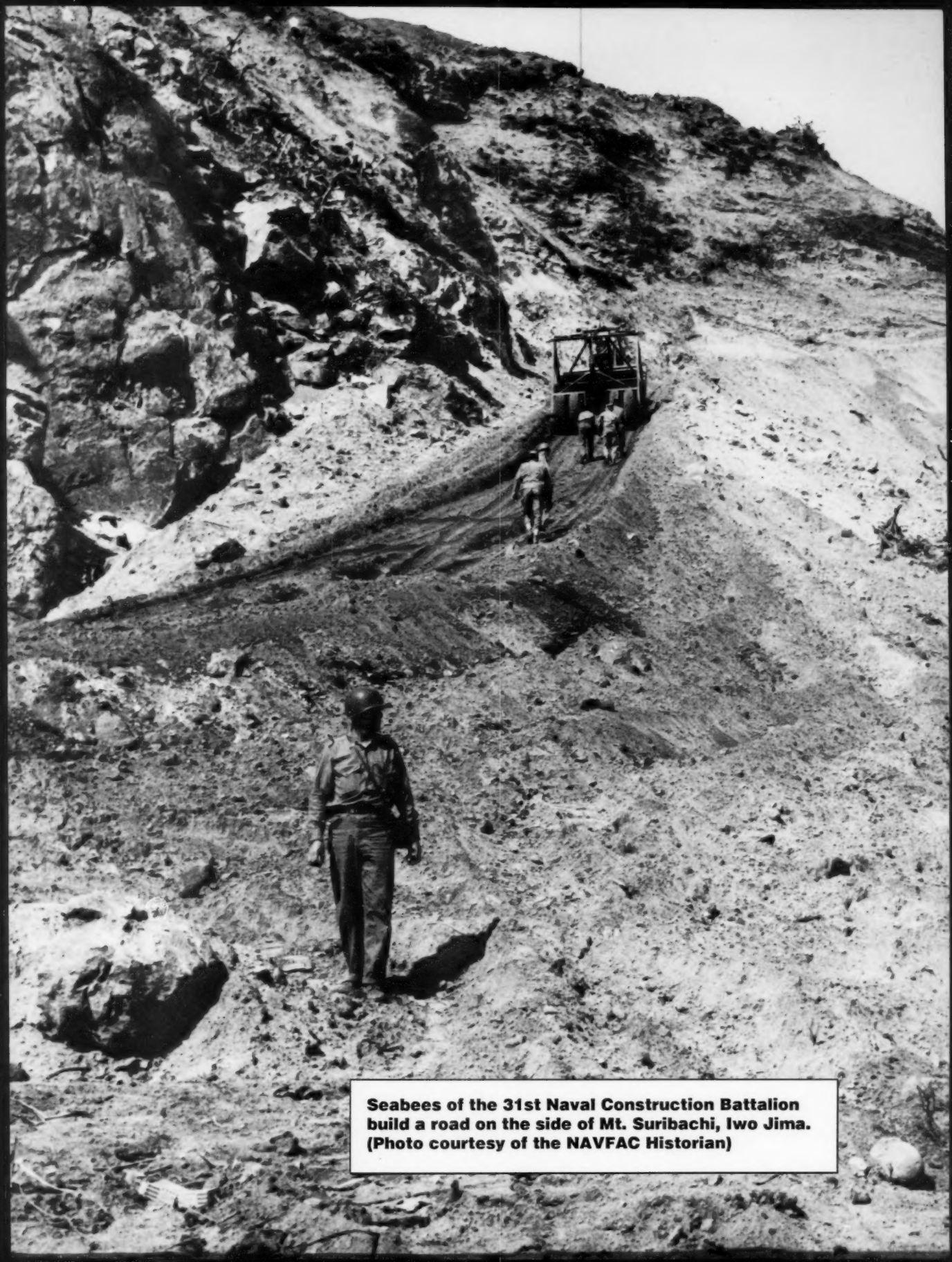
If you have a chart or graph information on spreadsheet, send a computer disk with the spreadsheet data on it. ❑

## Aides...

Continued from page15

nity of aides transcends services and even countries. Former aides are often called upon when issues of protocol or ceremony arise. Furthermore, the aide's service does not always end at the retirement of their admiral, which is where the venerable term "aide for life" has been ascribed.

During flag gatherings, aides are often seen keeping a close eye on their flag officer, sharing experiences and trading war stories. They know that if you haven't served as an aide, you simply cannot understand real trouble. If offered an assignment as an aide—take it! ❑



**Seabees of the 31st Naval Construction Battalion build a road on the side of Mt. Suribachi, Iwo Jima. (Photo courtesy of the NAVFAC Historian)**

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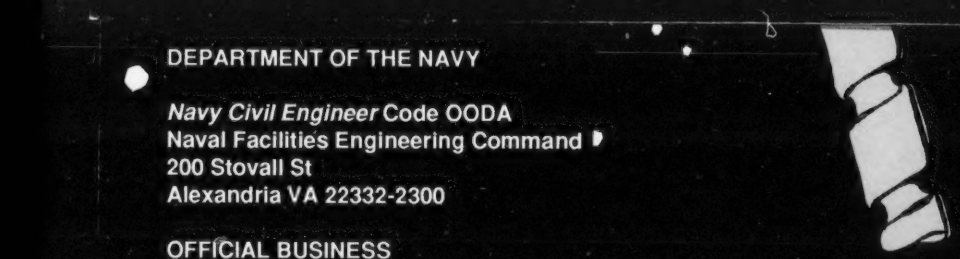

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